



**UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant:	CHRISTOPHER E. SCHAFER	)	
		)	Art Unit: 3753
Serial No:	10/697,376	)	
		)	Examiner: Craig James Price
Filing Date:	October 30, 2003	)	
		)	Mailing Date: March 23, 2006
Title:	IMPROVED FLUID RETAINING APPARATUS WITH BALL VALVE	)	

**Declaration under 27 C.F.R. § 1.132**

I, Christopher E. Schafer, of 1637 280<sup>th</sup> Street, Adair, Iowa 50002, a citizen of the United States of America hereby declare:

1. That I am an inventor of the invention that is the subject of the above application for patent.
2. In early 2003, Rodney Ramsey and I experimented with the taper angles of ball valve seats to ascertain the optimal valve seat taper angle.
3. We modified our injection molding tooling of the ball valve to experiment with four (4) different degrees of taper angles of the valve seat area of the ball valve.
4. The degrees of taper tested were 14.76 degrees, 17.76 degrees, 20.76 degrees, and 23.76 degrees.
5. We discovered that the smaller taper angles produced the better tendency for the ball to seal in the valve seat and of the taper angles tested, the taper angle of 14.76 degrees had the best seal and the taper angle of 23.76 degrees had an unsatisfactory seal.
6. We understood that because a typical user of this product tends to be extremely frail, even a minimal amount of sticking of the ball to the valve seat would cause a user to be unable to obtain fluid through an attached liquid delivery tube.
7. Although valves of a 14.76 degree taper angle did the best job of preventing leak-back of fluid, the ball had a greater tendency to stick in the valve seat at this angle.
8. For the final design of the preferred embodiment of the present invention, we selected the taper angle of 17.76 degrees to obtain a satisfactory seal and prevent the ball from sticking in the valve seat.

9. We had previously determined that a design having a radius on the seat area produced inconsistent and unsatisfactory results.
10. The undersigned declarant hereby declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

May 23, \_\_\_\_\_, 2006  
Date

Christopher E. Schafer  
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